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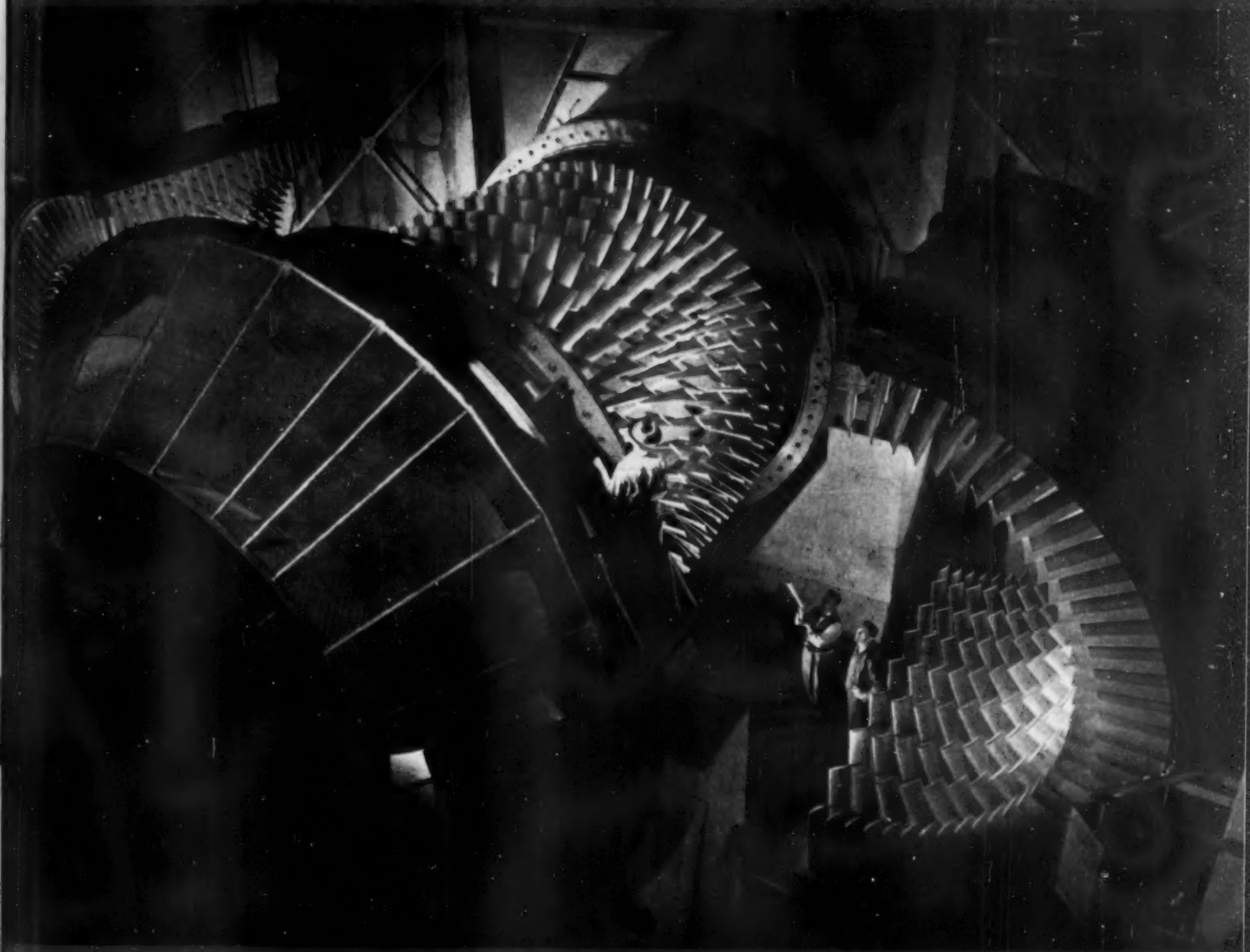
OCTOBER 8, 1949

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Mammoth Air Compressor

See Page 230

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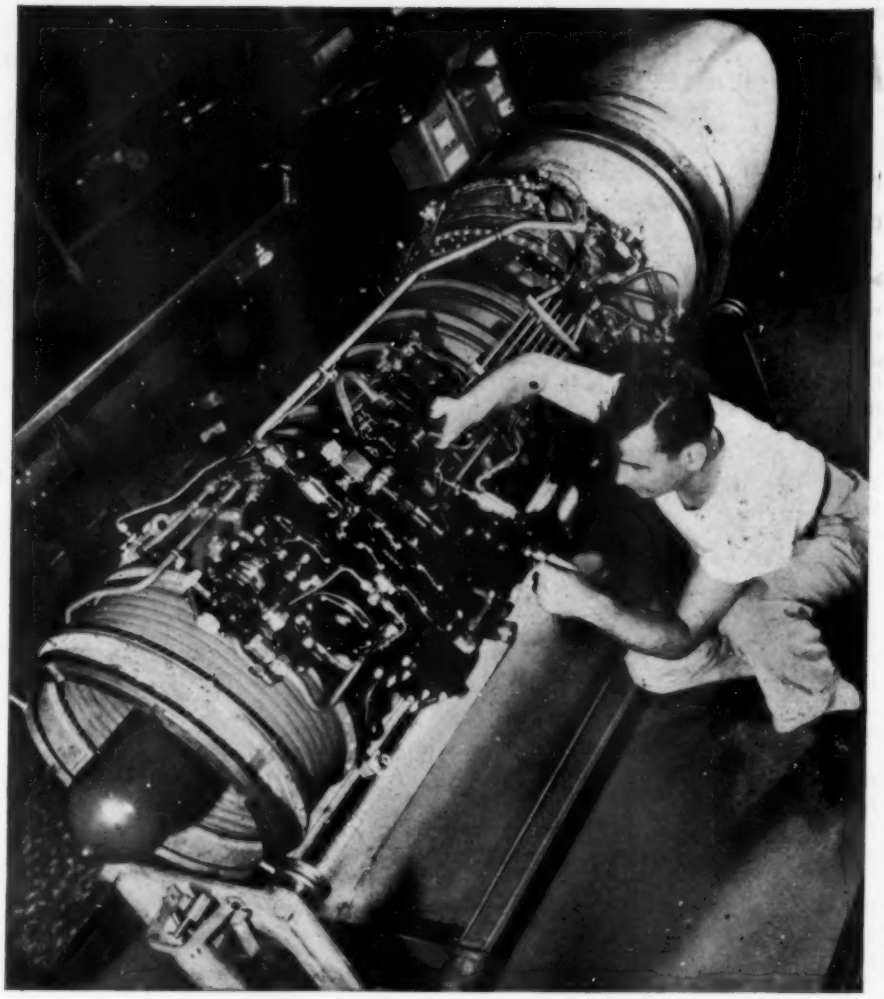
VOL. 56 NO. 15 PAGES 225-240

Research...
Power...
Better Living



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GEOLOGY

Mineral Wealth Detection

A new technique, which can predict accurately what metals and minerals can be gotten out of the earth, has been developed. It can penetrate "iron curtains" abroad.

➤ A METHOD of predicting accurately what mineral riches can be mined from the earth, both here and abroad, even before ore deposits are explored or discovered, has been developed by S. G. Lasky, chief of the mineral resources section of the U. S. Geological Survey, Washington.

The new technique, revealed to the 75th anniversary celebration of the Colorado School of Mines, Golden, Colo., promises to be useful in the "cold war" as a means of telling what metals and other minerals foreign nations can produce.

Already successfully tested on such diverse deposits as gold, copper, silver, nickel, vanadium, phosphate and manganese, the Lasky method uses a consistent mathematical relationship between the grade of the ore and the tonnage mined.

"Mining geologists have long appreciated that in many deposits there is a gradation from relatively rich to relatively lean material," Mr. Lasky said. "Tonnage increases as grade decreases."

Finding that no one had determined the precise relationship, Mr. Lasky discovered a consistent relation between tonnage and grade according to the classical equation of analytical geometry: x equals a plus b times log y. Applied to minerals, the grade is x and the tonnage is y, while a and b are constants that vary with the kinds of deposits.

What we can get out of the earth can now be predicted even before the deposits are fully known. The new formula has been fruitfully applied to manganese in Arizona, vanadium and phosphate in Idaho and Wyoming, gold in Alaska, and to nickel deposits.

"Iron curtains" can be penetrated and U. S. experts have more hope of determining just how much manganese is likely to be mined in Russia, India or South Africa, how much platinum in Russia and Canada, tin in Malaya and Bolivia, etc.

The new resources studies by this and other methods can help us to determine where to turn now that Russia has cut off manganese exports, and a Spanish-Italian cartel has increased mercury prices to unprecedented levels.

It will be profitable for us to appraise our mineral wealth, Mr. Lasky warned the mining engineers and geologists. But present knowledge is inadequate as less than a tenth of our country is mapped on a scale satisfactory as a basis for search and appraisal.

Whether the Lasky method of mineral reserves can be applied to uranium, the atomic bomb metal, is not known, and it was not discussed by Mr. Lasky. Uranium mining has been on a relatively limited scale, production figures are held secret by all nations now, and geologists are unlikely to make any public predictions.

Science News Letter, October 8, 1949

CHEMISTRY

Bright Finish for Metals

➤ BY merely dipping in a chemical solution some metal products are given a bright, reflective finish without mechanical polishing by a new process developed by Battelle Memorial Institute in Columbus, Ohio. The method will be known as chemical polishing.

Its chief advantage in production is its simplicity. Items of intricate form can be quickly polished to a high mirror-like luster by this dip treatment. The surface obtained may serve as the final finish surface or as a base for subsequent plating. A 50% reduction in finishing costs over ordinary mechanical or electrical polishing may be possible with the new process.

It works best on nickel silver, copper alloys, especially 70-30 brass, Monel metal, nickel or aluminum. It can not be used on steel, stainless steel or die cast metals.

The baths into which the metal parts are dipped for chemical polishing contain a mixture of acids, the basic ones being phosphoric, nitric and acetic acids. They operate at ordinary room temperatures and up to 200 degrees Fahrenheit. At the lower temperature, action in the bath is slower and longer immersion is required. Immersion periods vary from 10 seconds to 10 minutes, depending on the initial finish of the surface being treated, the final finish required, and the operating temperature of the bath.

Following the dipping, the work is rinsed and dried. If it is desired to plate over the chemically finished surface, this can be done without further treatment of the surface.

The chemical polishing process has already been well tested on many metal products. Those successfully polished include brass, copper, nickel-silver, Monel, nickel and aluminum. The action in each case is a true polishing action and the reflective surface obtained is in the polished base metal, not in a deposited coating of a different metal.

Science News Letter, October 8, 1949

RESOURCES

Oil Drought in 15 Years; Industry Seeks Substitutes

➤ AMERICAN oil reserves will run out in 15 years and against that day the petroleum industry is spending large sums to develop synthetic fuels, a research director declared.

However, the switchover to synthetic gasoline is not imminent because when natural petroleum is exhausted shale oil and coal should supply our needs for upwards of a thousand years. These oil industry prospects were described by C. K. Viland of the Tide Water Associated Oil Company, Martinez, Calif. The occasion was the seventy-fifth anniversary of the Colorado School of Mines, held at Golden, Colo.

Of the $100,000,000 that is spent each year on petroleum research, Mr. Viland said that "a fair share . . . is presently spent on experimental work with synthetic fuels." The industry intends to "take the leadership in developing methods for making fuels and lubricants from sources other than crude oil in the future."

Although the American oil reserve is only "equal to about 15 years' current usage," Mr. Viland pointed out that "Colorado oil shales can produce at least an-

"CHEMICAL POLISHING"—In a test of the new process, a spoon which has just been polished experimentally by dipping in a chemical polishing bath is rinsed prior to inspection of its surface.

other 100 years' liquid fuels supply." Fuel can also be extracted from coal "and U. S. coal deposits contain enough energy for perhaps 1,000 years at the present rate of consumption," he added.

To the industry that supports it, research pays big dividends, Mr. Viland said. He cited one company which "has realized a profit of $15 for each $1 spent."

Science News Letter, October 8, 1949

MEDICINE

Childhood Ills Hit Aged

➤ CHILDHOOD diseases, so called because they primarily attacked infants and children, are now shifting their attack to the oldsters in our population.

This paradox of an increasing infectious disease death rate among the aged at a time when such deaths are becoming almost rare among children is most dramatically emphasized by a series of cases of diphtheria. They are reported by Dr. Henry D. Brainerd of the University of California Medical School in GERIATRICS, scientific journal on diseases of old people.

Diphtheria from time immemorial has been considered a childhood disease. In the past it has been widely believed that 80% of diphtheria cases occur among children less than 10 years of age.

Yet among 147 unselected cases of diphtheria treated in the San Francisco City and County Hospital, almost one-third were over 45 years of age. This, the physicians pointed out, is only one instance of accumulating evidence that diphtheria is increasing proportionately as well as numerically among the aged.

This increase can be accounted for by surveying recent medical history, the physician said. Until 20 years ago diphtheria immunity was acquired by exposure to the disease, either with or without subsequent illness. After that time immunity was acquired by artificial immunization of children.

But many people who grew up before artificial immunization must have failed to gain natural immunity, and they are now contracting the disease in their later years.

Further, diphtheria is more deadly to the elderly than to younger people, though the infection itself appears not to be more serious. The difference seems to be that elderly people are more susceptible to the toxins which cause death. Mortality among the San Francisco group was 29.9% among those over 45, and 17.3% among the younger group.

The physicians also included a group of patients with pneumonia and one with meningitis. Again, the infections appeared not to be more severe among the aged; and the antibiotics were able to knock out the infections among the aged as readily as among the young.

But the handicap of damaged hearts, lungs, kidneys and other organs which accumulate among the aged appears to make survival more difficult for this group. In lobar pneumonia only 4.8% of those below 45 years of age succumbed, in contrast to 29.3% over 45 years of age. The contrast was even greater in broncho pneumonia, the mortality being 60.8% for those over 45 and only 9.6% for those under 45.

Dramatic contrasts were presented also among the meningitis groups. Five times as many persons over 45 died of meningococcal meningitis as in the younger group; while in pneumococcal meningitis the ratio was two to one.

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Question Box

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Photographs: Cover, National Advisory Committee for Aeronautics; p. 227, Battelle Institute; p. 229, Socony-Vacuum Oil Co., Inc.; p. 231, Iowa State College.

GENERAL SCIENCE

Famous Mansion Given To Scientists

➤ ONE of New York's famous mansions just off Fifth Avenue is the new home of the New York Academy of Sciences.

Given to this 133-year old science body by Norman B. Woolworth, it is expected to become an important center of science.

Science News Letter, October 8, 1949

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ASTRONOMY

Soviet Astronomy Attacks

Abuse heaped on Western astronomy by Soviet non-scientist faction is a method of keeping communistic doctrine alive in Russian astronomy, expert declares.

➤ A SMALL group of non-scientist "outsiders" whose "mumbo jumbo" has the support of the Soviet government is to blame for recent Russian attacks on Western astronomy, believes a Russian-born astronomer.

Dr. Otto Struve, honorary director of the University of Chicago's Yerkes Observatory, Williams Bay, Wis., and the McDonald Observatory of the University of Texas, Mt. Locke, Texas, told Science Service that abuse is being heaped on Western astronomy and astronomers by Soviet officials appointed to keep communistic doctrine alive in Russian astronomy.

Rarely trained scientists, these government-backed outsiders to the field, "have not enough knowledge to coordinate the antiquated scientific views of Marx, Engels, Lenin and Stalin with reality," Dr. Struve declares.

To combat "the threat to science" in this development, Dr. Struve urges that American astronomers prepare for publication "a more or less official statement to give voice to the American point of view." He proposes that the statement be drafted by a committee of two or three leading American astronomers. The committee, he suggests, might include persons of different political opinions. One member might be Dr. Harlow Shapley, director of the Harvard College Observatory, "or others who have in the past succeeded in influencing Russian public opinion," Dr. Struve says.

Because of the Soviet astronomy position, he feels that the next meeting of the International Astronomical Union should not be held in Russia, as is now scheduled.

Recognized Russian leaders in astronomy are vastly different from the officials attacking the West, emphasizes the American astronomer. Dr. Struve has met and visited with delegations of them several times in the past few years and has done research since the war with Academician G. A. Shajn.

Postwar relations with Russian astronomers have been "entirely harmonious," a group who visited this country only three years ago "acted in a modest, pleasant and entirely friendly manner," Dr. Struve recalls.

While the Soviets have made great official claims, Dr. Struve says that he has found their astronomers personally "often too modest."

But the attackers of Western views of the universe are men who would have been called "political commissars" in earlier days, the American astronomy leader explains. Unlike genetics, where a major controversy is raging between the Soviet's party views and accepted theories, the astronomy differences are not ideologically clear-cut, Dr. Struve feels. The Soviet officials uphold materialism and won't admit that there are any problems a follower of Marx and Stalin cannot solve.

"Perhaps," he suggests, "it is simply that the official Soviet mind abhors anything that is left unexplained."

Sharpest indication of the "party influence" in Soviet astronomy, Dr. Struve finds, is the acceptance of the theories of Academician Otto Y. Schmidt. Mr. Schmidt is a famous Arctic explorer who has developed his ideas of such matters as the origin of the solar system.

While Mr. Schmidt has become "well known for his brave exploits in the Arctic," his theories of astronomy are another matter, Dr. Struve emphasizes.

The American astronomer has studied Mr. Schmidt's theories in some detail, because "he was kind enough to send to me autographed copies" of some of his works. Dr. Struve found Schmidt's astronomical papers "rather naive and usually completely wrong."

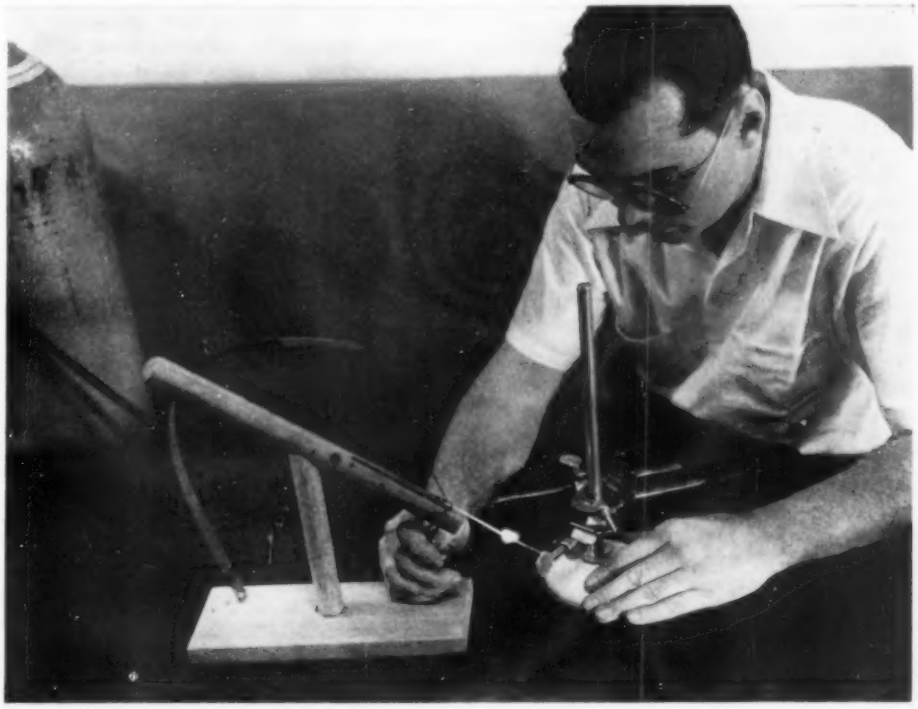
The Schmidt theories were disproved by Soviet astronomers at a meeting recently of the Moscow Institute of Astrophysics.

"But," notes Dr. Struve, "the very fact that these distinguished men were compelled to spend their valuable time disproving the fallacies of a person (Schmidt) who had no real claim to astronomical knowledge is an indication of the way things are developing in Russia."

Even when the recognized leaders of Russian astronomy attack American astronomers and theories, they tend to do it at the beginning and end of papers, Dr. Struve points out.

"It is as though they did not think in these terms when they were writing their own ideas."

"The Russian astronomers are engaged in precisely the same type of work that is done by our men of science," concludes



INDUSTRIAL BOW AND ARROW—In this method of thinning out rods of quartz to less than the diameter but several times the strength of a cobweb thread, one end of the rod is attached to a stationary base and the other to a wooden arrow. As the fiber melts under intense heat, the cross-bow is sprung shooting the wooden arrow into the air trailing the fiber with it. These thinned-out quartz strands go into a new ultra super-sensitive balance in the Technical Service Laboratories of the Socony-Vacuum Oil Company, Inc., in Brooklyn.

Dr. Struve. "Our methods and results are comparable and the Russians know this to be the fact."

Ideology Violates Principles

Reported attacks by the Soviets on Western astronomy are "tragically clear evidence that the policy of dictation of scientific 'principles' upon ideological and political grounds has been extended into the field of astronomy," a distinguished American astronomer declared.

Dr. Henry Norris Russell, famed astrophysicist of Princeton University, explained that "To call upon a colleague 'to correct his work along the lines of Soviet astronomical thought' is to violate the basic principles of scientific research.

"So long as the policy is continued, those who advocate it will be separated from all believers in freedom of investigation by an impassable barrier," Dr. Russell said.

Science News Letter, October 8, 1949

AERONAUTICS

Better Jet Fuels Ahead

Fuels that will ignite at extremely low temperatures and which will not blow out in speeding ram-jets are being developed for rocket and jet engines.

➤ BETTER fuels for rocket and jet engines are promised for the near future as a result of research at the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics, Cleveland, Ohio. Equally important are engines under development capable of delivering the extremely large powers required for supersonic speeds.

All sorts of fuels and fuel combinations are being tried. Some have been found that experimentally give far better results than those now in general use. One studied is 2.5 times as powerful. Particularly important is the research work to develop better jet engines able to withstand the very high temperatures at which they operate, and to construct them of materials available in the United States, or at least in the Western Hemisphere. America, in national emergencies, needs independence from imports.

With the increasing use of rockets and ram-jet engines to give combat planes greatly increased power for short periods in emergencies, fuels that will ignite at the extremely low temperatures encountered at high altitudes are essential. Also essential are fuels whose flames will not blow out in the speeding ram-jet.

Rocket fuels, which at low altitudes and moderate temperatures ignite spontaneously and rapidly upon contact, may refuse to ignite at all at high altitudes, or they may ignite in explosive fashion destroying the rocket engine. Two solutions are being worked out at the Lewis Laboratory. One is to keep the engines and the fuels sufficiently warm to insure prompt and safe starting. The other is the use of added substances to the fuel to shorten the ignition lag.

The ram-jet engine, unlike the rocket, depends upon oxygen from the air for combustion. It scoops up the air as it flies at rapid speed through the atmosphere. It can operate only after it is up to a speed of some 300 miles an hour, a speed that it can acquire from its carrier plane if it is to be used to give spurts in emergencies, or a speed that it can acquire from carrier rockets if it is launched from the ground.

Because the air in a ram-jet passes through the combustion chamber at high speed, there is a tendency for the flame to blow out. Operating the engines at high altitudes with resulting low pressures also makes combustion difficult. Since 1945, it was revealed, the velocities at which good combustion efficiencies can be maintained have been increased three-fold, and further progress is expected. Similar progress has been made in increasing the altitude limits for satisfactory combustion, a result of intensive research on flame-holding devices, fuel-injection methods, and combustion chamber design.

Present jet engines of the type used in jet fighters and bombers burn a kerosene-type fuel. When a barrel of crude oil is refined, only 6% of the resulting products is kerosene. Present plans are to use in the future about 50% of the products refined from a barrel of crude, a mixture that would contain all the kerosene and gasoline and about one-fourth of the diesel and heating oils in the petroleum. As a result of NACA's work, new jet fuels have been specified meeting this availability maximum from crude oil and they are substantially equal or better than the kerosene-type fuels now used.

Science News Letter, October 8, 1949

On This Week's Cover

➤ ROTOR blades on a massive shaft are capable of handling 2,000,000 cubic feet of air per minute in the compressor of the world's largest faster-than-sound new wind tunnel at the NACA's Lewis Flight Propulsion Laboratory, Cleveland, Ohio. As shown on the cover, two halves of the stator housing have been opened.

Science News Letter, October 8, 1949

ENGINEERING

Coal-Fired Locomotives Predicted to Equal Diesels

➤ COAL-FIRED locomotives, which will equal or better the present diesel locomotives in operation, were predicted at the meeting of the American Society of Mechanical Engineers by John J. Kane of the Standard Stoker Company, Inc., at Erie, Pa.

Three research and development programs are now under way to bring about the coal-fired locomotive, he said. Only two basic locomotive designs are being considered, however. They are the gas turbine and the steam turbine, both combined with an electric drive.

In one research project, coal would be used to produce gas, which in turn is burned for the turbine energy supply. In another, the coal is pulverized and burned under pressure in new, radical combustors with direct air supply to furnish energy for the gas turbine. In the steam-turbine program, the use of water tube boilers, pressure furnace and complete combustion control are features involved in present designs.

Dwindling oil reserves are spurring the development of these coal-fired locomotives. The proposed steam turbo electric will use approximately 6,500 pounds of coal per hour at the maximum operating condition. Both gas turbine proposed units will demand between 4,000 and 4,500 pounds per hour at their highest operating rates.

These low fuel rates combined with coal conditioning, pulverization, evenness of supply and feed, and the pressurized system of combustion, set forth new and challenging demands on the coal handling system, he continued. He described coal screw conveyors and stokers developed for the purpose.

Science News Letter, October 8, 1949

AERONAUTICS

Supersonic Speed Claimed For British Jet Fighter

➤ A BRITISH jet fighter, still on the "secret list" but claimed to be capable of reaching a speed faster than sound, is no longer a secret as far as its general appearances are concerned. The public had an outside view of it at the recent Farnborough Airfield show of the Society of British Aircraft Constructors in London.

It is the bullet-shaped Vickers Supermarine 510. The Royal Air Force, it is revealed, will be equipped with this plane in the relatively near future. It is a descendant of the Attacker, a plane powered by a Rolls Royce Nene turbojet. The Nene develops 5,000 pounds of static thrust. Prominent features of the new Supermarine are its bullet shape and its swept-back wings.

Science News Letter, October 8, 1949

MEDICINE

Fingerprinters Poisoned

Mercury powder used in developing fingerprints by policemen was found to be a poison hazard when men were exposed to it 250 hours per year.

➤ THE fingerprint men in police departments are in danger of getting mercury poisoning from the dusting powder they use.

Discovery of this danger, which may be widespread in England and in the United States where the same mercury-chalk powder is used, was made when an outbreak of mercury poisoning occurred in the Lancashire Constabulary.

The cases, believed the first of this new occupational poisoning to be recognized, are reported by Dr. John N. Agate and Monamy Bucknell of the Medical Research Council, the London Hospital, in the LANCET (Sept. 10).

The Lancashire Constabulary consists of a detective chief inspector and some 32 detective sergeants and constables who specialize in taking and developing fingerprints at the scenes of crimes with mercury-with-chalk powder.

With the exception of one man, all volunteered to be examined. Of the 32, seven had symptoms of tremor which affected the hands in each case. Three of these also had tremors of the lips and tongue and three of the eyelids. Two other symptoms known to be caused by mercury poisoning were also present: loosening of the teeth and irritability and embarrassment which caused the men to blush easily.

Although their urine was examined for traces of mercury, this was not a good test for determining mercury poisoning, the scientists pointed out. However, they said that the amount of mercury excreted by the men was abnormally high.

Estimates were made of how many hours were devoted by the men to developing the latent fingerprints. The technique used is to apply the mercury powder with a soft brush and then to blow off or brush off the excess. One of the affected patients had been exposed for only 160 hours for one year while the others varied between 250 and 460 hours per year. The scientists conclude that 250 hours per year constitute a danger.

The mercury was believed to have been either inhaled by the policemen while they were dusting the fingerprints or from the mercury dust lying around the laboratory where they worked, or it could have been absorbed through the skin. Some may have acquired the mercury by putting their hands to their mouth with the mercury dust on them.

Measures for protection, such as rubber gloves or masks, do not seem adequate to these scientists. They suggest that a substitute powder be found which will accomplish the same thing.

This was actually done in the Lancashire Constabulary by the officer in charge. When the origin of the trouble among his men was found he experimented and discovered a substitute which is credited as being an improvement over mercury powder and forbade the use of the mercury compound.

Policemen who do fingerprinting as a part-time duty are not in much danger of being poisoned, the scientists stated. At the same time they pointed out that certain people may have a special sensitivity to mercury and the hazard for these would be real.

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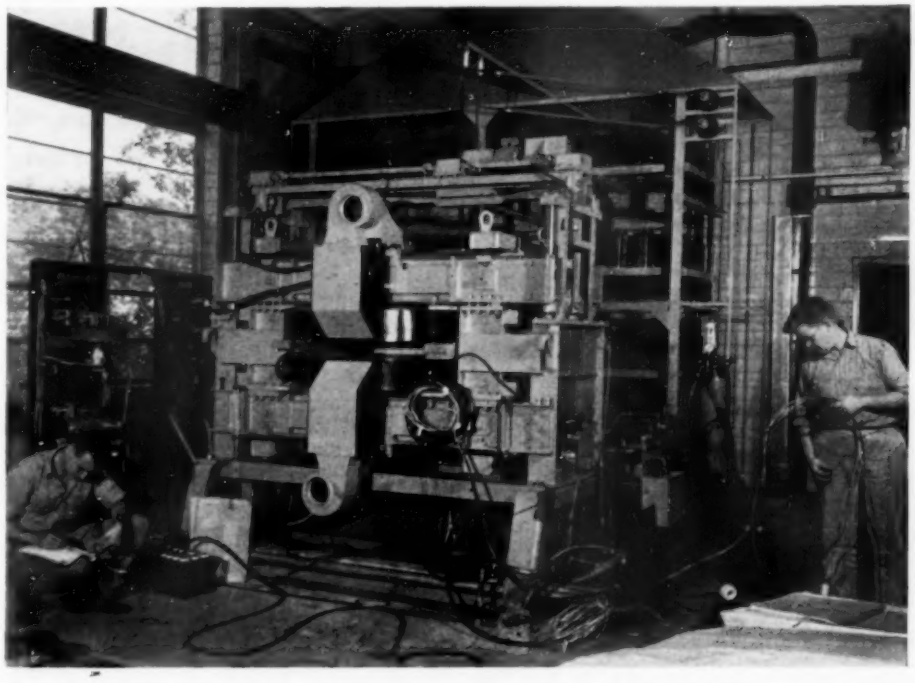

80,000,000 ELECTRON-VOLT SYNCHROTRON—The first application planned for the new Iowa State synchrotron, which is shown here in the final stages of wiring, is the study of nuclear reactions produced by the high-energy X-rays of the machine. Since the energy attained by this atom-smasher is above that obtained from natural radioactive sources, it is expected to extend knowledge in this field. The machine was built by General Electric Co., and is housed in the Iowa State College Institute for Atomic Research.

ASTRONOMY

Year's Fifth Comet Visible Through Telescope

➤ THE year's fifth comet discovered in Russia will approach closest to the earth on Oct. 22, 1950, but it will not be a conspicuous sight that you can see in the sky.

Dr. Allan D. Maxwell, professor of astronomy of Howard University in Washington, has computed an orbit based on observations from Russia and the U. S. Naval Observatory. Just now, the comet, visible only through a fair-sized telescope, is about 345,000,000 miles from the earth and 437,000,000 miles from the sun.

Next year, on its closest approach, it will be 90,000,000 miles from the earth and 182,000,000 miles from the sun. It is coming in toward the sun and the earth very slowly and traveling southward. It is probably traveling in a parabolic orbit.

The whole of its travel through the solar system is beyond the earth's orbit and it is tilted 34 degrees to the plane of the earth's travel.

Science News Letter, October 8, 1949

Of the nation's 624,000,000 acres of *forest land,* 196,000,000 acres are in public ownership and the rest in private ownership.

Radioactive materials, injected into the trunk, branches or roots of trees, offer a new and rapid means of studying *tree nutrition.*

NUCLEAR PHYSICS

Russia's Atomic Explosion May Have Been Accidental

➤ IF THAT atomic explosion in Russia was accidental, it mighr have happened from a wrong estimate of the critical mass of uranium or plutonium, the amount of these fissionable metals that must be brought together to produce an explosion.

Scientists discussing this possibility, without revealing any USA secrets, however, observed that when the bomb metal is in water, actually less of it is needed to reach the state of an explosion than when it is a metallic hunk. This is because the water slows down, or "moderates," the neutrons that act as triggers to set off the material explosively. Slow neutrons are necessary to cause the fission.

The possibility is that the Russians working with the fissionable material overlooked this danger, even if it is no secret from them.

The famous Smyth report hints that the critical mass of the atomic bomb is between one and 100 kilograms or about two and 220 pounds, which are very wide limits.

Science News Letter, October 8, 1949

PSYCHOLOGY

Don't Believe Rumors Of A-Bomb Explosions

➤ DON'T believe stories you may hear about bombs dropping in your vicinity even if you hear a loud noise. This is the warning of psychologists who have studied the psychology of rumor.

The announcement of the Soviet atomic explosion has filled many with vague fears. But these will not lead to panic unless something happens nearby to crystallize them. Such a happening might be some ordinary accidental explosion with loud noise and perhaps flames. With the vague fear held in mind, people might immediately jump to the conclusion that they were being bombed. Rumors might start. Panic could follow.

Science News Letter, October 8, 1949

ENGINEERING

Drops from Spray Nozzle Sorted, Counted by Device

➤ THE thousands of liquid drops shot out of the nozzle of a spray drying machine can be sorted and counted rapidly and accurately by a new electronic device developed at the University of Wisconsin, the National Electronics Conference was told in Chicago.

The device is called a Pulse Length Sorter and Counter by the men who invented it, Prof. R. J. Parent of the institution's college of engineering, and Robert W. Schumann, a graduate student. It is of important practical use in a wide variety of chemical and engineering industries ranging all the way from manufacturing soap powder to building gasoline engines, they stated.

Soap powders for laundry use are made by a spray-drying process, they said. Liquid soap is shot through a nozzle at the top of a tower and the drops dry into spheres as they fall. The new device enables the operator to adjust the nozzle to obtain a uniform soap powder product. In an internal combustion engine, the uniformity of the spray of the fuel injected determines the efficiency and economy of the motor's operation. The new electronic sorter-counter can be used in measuring and gaining the uniformity needed. Working details of the electronic instrument were presented to the meeting.

Science News Letter, October 8, 1949

MINERALOGY

Old Oil Wells May Yield 14 Billion Barrels

➤ SALVAGING old oil wells may triple total yields in some cases, a petroleum expert declared in Golden, Colo. One of his colleagues estimated that oil from this secondary source might amount to 14,000,000,000 barrels.

By flooding old wells with water under pressure, R. C. Earlougher, Tulsa petroleum consultant, said that yields may range "all the way from 25% to 300% of the primary recovery."

These are the extremes and "additional data are needed before a fair estimate can be made," he explained to the petroleum production conference being held in connection with the seventy-fifth anniversary of the Colorado School of Mines.

The 14,000,000,000 barrel estimate of oil from such secondary techniques was made by Paul D. Torrey, president of Lynes, Inc. of Houston. Current estimates of U. S. A. "secondary oil reserves" are 7,000,000,000 barrels or more, he said, adding that he is "willing to venture the guess that the physically recoverable secondary oil reserve of the nation may be as much as twice this figure."

Although this represents a relatively small proportion of the total reserve, secondary operations "nevertheless are an important factor in the business of oil production in several states," he said.

Other salvage methods in addition to water flooding, are vacuum pressure, air and gas injection, and to a limited extent open mining. Application of all of them, Mr Torrey said, constitutes "a true conservation measure," not only in the older oil fields, but in the new fields as well because it prevents the waste of leaving hard-to-reach oil in the ground.

Foreign countries also have such secondary reserves, but so far "no systematic effort has been made to evaluate" them, he said.

Science News Letter, October 8, 1949

IN SCIEN

ENTOMOLOGY-ARCHITECTURE

Termites Just Love Modern Architecture

➤ ALTHOUGH the architects don't always see eye to eye on the subject, modern architecture is enthusiastically endorsed by termites.

Two features in particular which termites deeply appreciate are building close to the ground and the use of soil-filled masonry porches. These characteristic features of modern dwellings are well adapted to the termite scheme of things. They both help the insects to gain access to the toothsome woody parts of a house on which they thrive.

These and many more helpful facts are assembled in a pamphlet on the CONTROL OF TERMITES IN BUILDINGS which has just been published by the Connecticut Agricultural Experiment Station, New Haven, Conn. It is not always an easy matter to tell whether a building has been infested by the pests, according to entomologist Neely Turner, the author. Sometimes the termites will flaunt their successful invasion by flying around the house in swarms. More often they lurk invisibly in the woodwork, and can only be detected by poking in the right places with a sharp instrument that exposes the termite burrows.

Science News Letter, October 8, 1949

GENETICS

Giant Apples Sought for Data on Genetic Make-Up

➤ AN outdoor sport that any number can play has been introduced in Geneva, N. Y. It is not called "The Big Apple", although it should be, because that is the object of the game: finding big apples.

It's easy as pie—apple pie. You don't have to be an athlete. All you have to do is to keep your eye peeled and every time you see a giant-sized apple carefully mark the tree and send off a postcard (not the apple) describing the fruit and giving the name and address of the grower.

The man who wants this information on giant apples, or sports, as they are called, is Dr. John Einset of the New York State Agricultural Experiment Station in Geneva. These unusually large fruits are studied for their uncommon genetic make-up.

Giant apples can be identified from these clues: the fruits are frequently twice normal size, flatter, and irregular. The tree on which they grow tends to be flatter and bushier.

Science News Letter, October 8, 1949

E FIELDS

VETERINARY MEDICINE

Animals Can Have Man's "High-Life" Diseases

➤ GOUT can invade the barnyard and cirrhosis of the liver strike the family's pet dog, the American Veterinary Medical Association in Chicago warns.

Chickens, turkeys and dogs may get these diseases even though they are teetotalers and do not indulge in the high living popularly considered a cause of gout and cirrhosis, the association points out.

Cancer, stomach ulcers, kidney trouble, rheumatic fever, tetanus (lockjaw), gall stones, heart disease, goiter, diabetes, rickets and nervous disorders are other diseases common to both man and his pet and domestic animals.

Some 90 different germ-caused diseases can be spread from these animals to man, who in turn occasionally gives his infectious diseases to his animals. Example of this, the association says, is the "strep" sore throat of humans which can cause mastitis in cattle.

Because of the dual nature of these diseases, medical and veterinary medical authorities and researchers are cooperating on an increasing scale to help solve common problems in both fields.

Science News Letter, October 8, 1949

ENGINEERING

New Aluminum Welding Process Speeds Operation

➤ A GREATLY improved process for welding aluminum was revealed by Battelle Memorial Institute of Columbus, Ohio. It utilizes a new pistol-shaped welding tool, through which filler metal in wire form is fed at controllable rates of speed, while the welding electric current is carried through the filler wire, forming an arc between its end and the work.

A sheath of argon or helium gas surrounds the arc and prevents air from coming into contact with the molten metal. Power may be supplied from a standard welding generator. The equipment includes both semi-automatic gun and full automatic equipment.

The process and equipment are the result of joint research conducted at this well-known industrial research center and in laboratories of the Air Reduction Sales Company at Murray Hill, N. J. This company manufactures oxygen, acetylene, inert gases and various types of welding equipment.

Aluminum plates one-eighth to three inches or more in thickness can be welded with the new process, which is to be known as "Aircomatic." The operation is claimed to be at least four times faster than any previously known process of welding aluminum which produces welds of equal quality. It requires less skill. No solid fluxes are required. There are no slags to be cleaned from welded joints, and the welder's work is not interrupted to change electrodes. Welds can be made in any position, flat, horizontal, vertical, or overhead.

Science News Letter, October 8, 1949

PLANT PATHOLOGY

Diseased Corn Suddenly Increases

➤ A SUDDEN increase of a hitherto minor corn disease for which no cure is now known has been observed by Dr. G. W. Boewe of the Illinois Natural History survey, Urbana, Ill.

The disease, which causes the corn stalk to rot and collapse, was first found in Arkansas in 1920. It has been known in southern Illinois since 1922, but its appearance has always been local and sporadic. This season observers reporting to Dr. Boewe note a sudden trend northward.

Bacterial stalk rot, as it is called, has in no known cases attacked more than four percent of the stalks in a given field. In the U. S. Department of Agriculture's PLANT DISEASE REPORTER, Dr. Boewe summed up the situation in these words:

"No control measures are known. At present the disease is not sufficiently abundant in most places to require control. However, the fact that it has suddenly appeared in greater than usual amounts over a much larger part of the State suggests that it ought to be watched carefully. We shall appreciate receiving additional reports and samples."

Science News Letter, October 8, 1949

PHYSIOLOGY

Knee Jerk Reflex Depends On Height to Age of 20

➤ HOW fast your foot jerks forward when the doctor strikes your knee to test your knee jerk reflex is directly proportional to your height if you are between six and 20 years old. After the twentieth year, the reflex time is longer in proportion to height than it is for the immediately younger years.

These findings, and a formula for predicting the knee jerk reflex time from body height without regard to age, were reported by Drs. G. Clinton Knowlton and Louis P. Britt of Emory University School of Medicine at the meeting of the American Physiological Society in Augusta, Ga.

The results, they said, suggest that after age six the big feeling and moving nerve axones grow only in length and do not get any larger in diameter.

Science News Letter, October 8, 1949

ENGINEERING

English Reveal New Type of Wind Tunnel

➤ SOMETHING new in wind tunnels for aviation research has been revealed. It is a "straight-through" tunnel, powered with a standard turbo-jet engine widely used in airplanes. It is a development of the English Electric Company, London.

The engine is installed at the terminal end of the tunnel, and acts as an air ejector. The working air current in the test section of the tunnel is due to the suction of the ejector. Most wind tunnels employ the "closed-circuit" principle in which air is forced around and around the endless tunnel by means of powerful compressors. This new tunnel is straight. The air is not reused. It is sucked into the forward end and discharged into the atmosphere at the rear.

The engine employed is a Rolls-Royce Nene, which has a static thrust of 5,000 pounds. The Nene is housed in a nacelle carried in a bulge of the tunnel. A space is left between the inner nacelle and the outer wall through which two-thirds of the tunnel air is drawn by the ejector action of the jet. The remaining one-third of the air is drawn direct into the engine. When no model is in the working section, a rate of airflow nine-tenths the speed of sound can be obtained. The English Electric Company is now working on a wind tunnel to give much greater speeds, using no more power than that available from a Nene turbo-jet engine.

Science News Letter, October 8, 1949

VETERINARY MEDICINE

No More Puny Pigs— Cause and Cure Found

➤ THE cause and the cure of a mysterious ailment that produces puny pigs has just been announced. The cause has eluded veterinarians for years.

The illness has doomed thousands of pigs each year to fail to achieve adult stature, an expensive loss to farmers. It produces an inflammation of the digestive tract, the animals fail to gain weight and consequently are a total loss as porkers.

The condition arises, the American Veterinary Medical Association reports, from a protein and vitamin deficiency in the diet. Piglets fed a low-protein diet lacking essential B vitamins develop the inflammation, a form of swine enteritis, and suffer from scours, a form of diarrhea.

A high-protein diet alone does not cure the condition. When in addition B vitamins are injected, the animals promptly respond. They get back their appetite, put on weight, and are well on the way to market. The vitamins used are niacin, calcium pantothenate, and in some cases, riboflavin.

Science News Letter, October 8, 1949

ENGINEERING

Cut Heat Loss to Save Fuel

Full heat value from fuels requires stopping up all avenues through which heat can escape and proper firing of stoves for full combustion of coal.

By A. C. MONAHAN

➤ THE careful home-owner already has his heating furnace in shape for its winter job, but now is the time to examine the house itself and to put it into condition for heating economically and efficiently. Lost heat means fuel wastage.

Preparation for economical heating means closing cracks and crevices through which heat may escape, the installation of window and door stripping, re-puttying and painting storm windows, and perhaps the installation of wall and roof insulation if past experience shows that it is needed.

The furnace itself is the number one factor in satisfactory heating, but a good furnace is of slight economical value if the building itself will not hold heat. Every furnace needs careful preparation before the winter fire is ignited. The coal-burner particularly needs attention. Usually it is a job for the home-owner, unless new parts must be installed. For the oil or gas furnace, an expert is desirable. The cost is usually far off-set by fuel saving.

Removing Soot

The principal job with the coal burner is proper cleaning. All soot must be removed from the flues. Carbon deposits are excellent insulators, and soot layers on the flues prevent the passage of the heat from the fire to the air or water which carries the heat to the rooms. A heavy soot deposit can cut heating efficiency by one-half.

Ordinarily the soot is removed with a wire brush with flexible handle which is standard equipment with most coal furnaces. Muscle and persistence are the principal requirements. Summer cleaning is not enough; flues of a furnace in use should be cleaned perhaps once a month, the frequency depending upon the type of coal used and the skill of the fireman as an operator.

Beside cleaning, there are other factors in furnace preparation that are important. Warped grates are nuisances, and they are also coal-wasters. They should be replaced. All dampers and checks, and safety valves, should be checked and replaced if necessary. Stovepipe from furnace to chimney should be renewed if it shows signs of leakage. This is essential to eliminate fire hazard and to prevent the escape of carbon monoxide and other gases into the house, and also of smoke which soon settles as soot on the walls.

For fuel saving, proper furnace firing is all-important. Most home-owners are not experts. What they have learned is by trial and error. No matter how efficient they may think they are, they should study with care available publications on furnace firing that have been prepared by professionals.

Such publications are available without cost from the U. S. Department of the Interior and the Department of Agriculture. They also can be obtained from many state universities which have given special study to home heating problems. The University of Illinois, at Urbana, might be mentioned as one.

Again, excellent firing directions are available from Anthracite Institute, Wilkes-Barre, Pa., and Bituminous Coal Institute, Washington, D. C. These are national organizations maintained by the anthracite and bituminous industries respectively, and both are interested in the wider use of coal through bettter coal usage.

A belching chimney is always a sign of waste. Smoke is soot, and soot is made up of fine carbon particles which escape combustion in the furnace. Smoke from a chimney means that complete combustion is not taking place. It is undesirable from another standpoint: that of health. The soot in the atmosphere, together with gases, also partly the results of incomplete combustion, add pollution to the air. It should not be assumed that the furnace is the only air-polluter. Much pollution comes from other sources.

Improper Firing

A belching chimney is also a sign of improper firing. Because of its nature, bituminous coal creates more smoke than anthracite. Spreading the fresh coal over the entire burning coal bed results in much smoke. Better firemen heap the bituminous coal in the ordinary furnace either on one side or in a cone in the center so that combustion takes place at the foot of the slope.

There is an air-jet system of eliminating smoke in a commercial coal furnace but it has not yet been adapted for use in the household. The principle involves a stream of air driven into the combustion chamber over the coal. There the air mixes with the gases and vapors formed by the heat of the burning coal, and causes complete combustion.

Some of the stove and furnace patents on file in the U. S. Patent Office indicate that inventors have been trying for nearly 100 years to develop practicable smokeless coal heaters, it was recently stated by Prof. J. R. Fellows of the University of Illinois. Success was limited. But the university engineering experiment station seems now to have the problem well solved.

A smokeless stove, already on sale, has been developed by Battelle Memorial Institute of Columbus, Ohio. The development project, which had the same objective as that of the University of Illinois, is under the sponsorship of Bituminous Coal Research, Inc., and a group of stove manufacturers.

Smokeless Heater

In the Illinois furnace, fresh coal is converted to coke in a coking chamber at the front of the furnace, then is fed into a coke-burning combustion chamber at the rear. The volatile matter released as a gas in the coking process mixes with secondary air introduced through vertical air passages adjacent to the combustion flue, where the mixture becomes ignited.

The rate of release of gases from the fresh coal is governed by the amount of air admitted to the coking chamber, and the rate at which the coke is burned is determined by the amount of air passing in the ashpit door and through the grates.

Not all effort to develop better coal burning furnaces is confined to bituminous burners. A new anthracite furnace, now on the market, is claimed to be efficient, soot-

ANTHRACITE ANTHRATUBE—Bearing little resemblance to ordinary furnaces, the Anthratube is claimed to be efficient, sootless and smokeless,

SMOKELESS HEATER—One of the recent developments in home-heating is this smokeless heater under test in the Champion Coal Company's laboratory at Pittsburgh.

less and smokeless.

In basic principle, it was developed by the Anthracite Institute, Wilkes-Barre, Pa., but the creation of practical household units was carried out by commercial furnace manufacturers. It is known as the Anthratube. One claim is that it saves from 15% to 38% of the fuel bill. Anthra-Flo is the newest development in equipment, and utilizes the general principles behind the Anthratube.

The Anthratube bears little resemblance to ordinary furnaces, being relatively small in size, and having a horizontal tubular combustion chamber from six to eight inches in diameter. Coal, from a chute, is forced in one end in a continual stream by a screw propeller, similar to that in the familiar household meat grinder. The same pressure forces the ashes out the other end.

Combustion takes place in the half of the tube nearest the ash end. The coal is preheated in the approaching stretch. Air for combustion is drawn through the tube in the opposite direction to the movement of the coal. The same suction draws the gases of combustion through the unignited fuel in the tube and out into the chimney. The heat from the combustion is picked up by air or water in a chamber surrounding the combustion tube.

Coal is still by far the most important fuel used in America in spite of greatly increased installation of oil and gas furnaces. It will probably always remain the most widely used home fuel because there is enough unmined coal in the country to last for many centuries, while known deposits of natural petroleum and gas are approaching exhaustion.

But wood promises to become more important. Much wood now wasted in logging operations may find its way into the fuel market in the present campaign to save wood wastage.

Foreseeing wide use of wood as fuel, the Northeastern Wood Utilization Council, New Haven, Conn., has had a furnace developed to deliver more useful heat from the wood. The new furnace is called the Woodomat, and it is now in commercial production. In it the wood is first heated enough to break it down into charcoal and gases, These products are then mixed with additional air and burned. Complete combustion is the result, and there are no deposits of creosote and soot.

Science News Letter, October 8, 1949

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PSYCHIATRY

Alcohol Addiction Comes From Five Sources

➤ FIVE things combine to make an alcohol addict, Dr. Robert V. Seliger, Baltimore, Md., psychiatrist, told the American Prison Association's Congress of Correction in Milwaukee, Wis.

The five are: 1. Ancestry. 2. Early and later emotional hurts, likes and experiences, both conscious and unconscious. 3. A physical ingredient including the alcoholic's neurological system and the reactions associated with his glandular make-up, blood chemistry content, biological rhythm and metabolism. 4. Emotional and personality difficulties with other people and in coping with situations. 5. A lack of or inadequate basic philosophy, faith and conviction in the essential and profound worthwhileness of life.

Science News Letter, October 8, 1949

MATHEMATICS-AGRICULTURE

Slippery Statistics Studied in Paris

➤ IN an attempt to remove some of the slipperiness from the elusive science of statistics, European governmental experts are going to a three-month "school" in Paris sponsored by the Food and Agriculture Organization.

The "students" are government statisticians. The objective is to bring all agriculture and population statistics into uniformity, so that the figures from one government may be readily compared to those of all others.

This venture, which will run until Dec. 22, is called the European Center of Applied Agricultural and Demographic Statistics. A successor to previous statistics seminars held by FAO in Baghdad and Mexico, the Paris center was organized with the help of the United Nations Statistical Office and the French Government, and with the cooperation of UNESCO.

Science News Letter, October 8, 1949

IF you are interested in acquiring distinguished but inexpensive books for your science library, you will want a copy of Jean Henri Fabre's famous CURIOSITIES OF SCIENCE for only $1.49. This 373-page classic in the field of nature observation has long been out-of-print and available only at high O. P. prices. It covers monkeys, elephants, seals, birds, animal nutrition, plant life, ore, etc. Every phenomenon of nature that this noted French naturalist observed he wrote down in the fascinating book. Yours while our limited supply lasts. Another outstanding book for the science-minded: CHARLES DARWIN AND THE VOYAGE OF THE BEAGLE for only 98c. Edited by Darwin's granddaughter, this collection of letters and notes, written by the naturalist during his famed trip to South America, was published at $3.75. For the person interested in the implications of modern physics, we recommend P. W. Bridgman's NATURE OF PHYSICAL THEORY for $2.25. Add 7c postage per book ordered. Money-back guarantee. Write for FREE CATALOG listing other outstanding bargains in SCIENCE received regularly by 5000 satisfied customers.

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GENERAL SCIENCE

Science Talent Sought

The Annual Science Talent Search goes into its ninth year of discovering and fostering through scholarships the science ability of the Nation's young people.

➤ HIGH school students with scientific research ability are now being sought in the Ninth Annual Science Talent Search.

Boys and girls, seniors in the 27,000 private, parochial and public schools in continental U.S.A. are now eligible for $11,000 in Westinghouse Science Scholarships to further their education in science.

In announcing the Science Talent Search for the ninth consecutive year, Watson Davis, director of Science Service, which conducts the Search through Science Clubs of America, reaffirmed the need for finding and saving the science talent of young people. "One of the most precious resources of our country," he said, "is the talent of its boys and girls. Talent in science is a rare gift. It must be recognized and cultivated wherever it can be found."

Past experience has proved that students with science talent are not restricted to certain parts of the country. They are everywhere. All high school principals will soon receive the forms to request entry materials in the Ninth Annual Science Talent Search for their most promising science-minded seniors.

About 16,000 sets of entry materials are expected to be sent out on and after Nov. 15. The thousands of seniors will comply with all requirements for entry right in their own schools.

From the 16,000 entries it is estimated about 3,500 will complete all entry requirements. Of these 40 will be named as winners and will receive 5-day, all-expenses-paid trips to Washington, D. C., to attend the Annual Science Talent Institute.

Another 260 will be named for honorable mention. All 300 will be recommended to colleges, universities and technical schools of their own choice. As in the past, it is expected many will receive offers of financial assistance for college educations from other sources on the basis of this honor.

To comply with entry rules each contestant must take a three-hour science aptitude examination in his own school, submit personal and scholastic records and write an essay of about 1,000 words on "My Scientific Project." The examination may be taken as early as Dec. 5 but all entries must be in the offices of Science Clubs of America by midnight, Tuesday, Dec. 27, when the competition closes.

Winners and honorable mentions will be announced late in January, 1950, and the 40 winners will come to Washington, D. C., in March, 1950. After five days of meeting the nation's outstanding scientists, learning about the latest developments in science, and visiting places of historic and scientific interest the winners will receive scholarships ranging in size from $100 to $2,800.

Through the eight years of its existence the Annual Science Talent Search has located 320 winners and 2,080 honorable mentions. These young people are now making their mark in scientific circles. Many of them already have from one to four degrees in science and are active as chemists, physicists, doctors, mathematicians, engineers, biologists, astronomers and in many other fields of science. Some have made important contributions to their fields of study and others are well along in their preparation to do so.

The objectives of the Science Talent Search are:

1. To discover and foster the education of boys and girls whose scientific skill, talent and ability indicate potential creative originality and warrant scholarships for their development.

2. To focus the attention of large numbers of scientifically gifted youths on the need for perfecting scientific and research skill and knowledge so that they can increase their capacities for contributing to the rehabilitation of a war-dislocated world and to help the United States, with the aid of science, to lead the world to permanent peace.

3. To help make the American public aware of the varied and vital role science plays in world affairs and in raising the standard of living.

The judges of the Science Talent Search are: Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service; Dr. Rex E. Buxton, Washington psychiatrist; Dr. Harold A. Edgerton, vice-president of Richardson, Bellows, Henry & Co.; and Dr. Steuart H. Britt, manager of Research and Merchandising, McCann-Erickson, Inc., both of New York City. The latter two have designed the science aptitude examination for each of the Science Talent Searches. High school seniors in some states will have a double chance to win scholarships through state Science Talent Searches run concurrently with the national competition and by special arrangement with Science Clubs of America.

In 1949 the following states held these competitions: Alabama, District of Columbia, Georgia, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Montana, Pennsylvania, Tennessee, Virginia, West Virginia and Wisconsin. Other states also signed up for 1950 include: all of New England, South Dakota and Texas.

The Science Talent Search is conducted annually by Science Clubs of America, administered by Science Service. It is made financially possible by the Westinghouse Educational Foundation of the Westinghouse Electric Corporation.

For complete details of the Science Talent Search write to Science Clubs of America, 1719 N St., N. W., Washington 6, D. C.

Science News Letter, October 8, 1949

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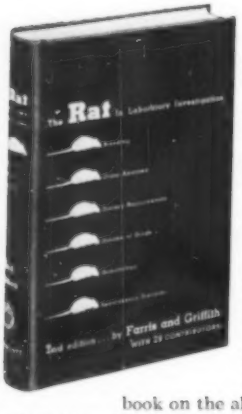

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Words In Science—
APE-MONKEY

➤ The apes are the most man-like of all animals. They walk on two legs, but have long arms and differ from men in having big toes which oppose the other toes in the way a thumb opposes the fingers.

Monkeys differ from apes in more than their smaller size. They have tails and some have cheek pouches. They ordinarily walk on four feet although they sit erect.

Both monkeys and apes along with lemurs and tarsii belong to the general order of primates.

Science News Letter, October 8, 1949

He finds trouble by ear

As this cableman runs his pickup coil along the cable, his ear tells him when he has hit the *exact spot* where unseen trouble is interfering with somebody's telephone service.

Trouble develops when water enters a cable sheath cracked perhaps by a bullet or a flying stone. With insulation damaged, currents stray from one wire to another or to the sheath. At the telephone office, electrical tests on the faulty wires tell a repairman approximately where to look for the damage.

A special "tracer" current, sent over the faulty wires, generates a magnetic field. Held against the sheath, an exploring coil picks up the distinctive tracer signal and sends it through an amplifier on the man's belt to headphones. A change in signal strength along the cable tells the exact location of the "fault."

Compact, light, simple to use, this test set makes it easier for repairmen to keep your line in order. It is another example of how Bell Laboratories research helps make Bell Telephone service the most dependable in the world.

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BIOLOGY

NATURE RAMBLINGS

by Frank Thone

Defeating Winter

➤ LIVING things use a wide variety of means in defeating or evading the deadly blight of winter! Plants, in general, have the hardest time of it. Lower forms, being mostly aquatic, keep refuge in the water, as fish do, and stolidly stick it out. Water seldom freezes all the way to the bottom. Some of these pond inhabitants, at that, produce desistant spores in autumn, that fall to the bottom and lie dormant until spring.

Higher plants either trust the fate of coming generations to their seed and submit to being frozen to death, as the annual herbs do, or crouch beneath coverings of dead leaves and drifted snow, or even retreat into bulbs, rootstocks, etc., leaving no parts exposed above the surface. Trees, shrubs and woody vines either shed their leaves and stand as skeletons through the bitter season, or cling stubbornly to close-reefed evergreen foliage, and wrestle it out with the storms.

Animals, being motile for the most part, have a wider choice. Some, like short-lived insects, entrust the fate of the species to eggs or pupae, as annual plants do to seeds, and make no attempt to live through the winter. Others, notably birds, frankly run away, migrating southward in vast flocks as winter moves down the map, to return north with spring.

Many hibernate; and there are all degrees of hibernation. Some, like ground squirrels and frogs, pass into a "deathseeming swoon," from which it is extremely difficult to arouse them without warming them up to springtime temperature. Others, like bears and some species of squirrels, sleep deeply or lightly, as particular environmental conditions dictate. Some bears go into their dens in autumn and are not seen again until spring. Others emerge during thaws and forage for a little extra food to supplement their stored fat. In the South, of course, bears do not hibernate at all.

Many animals, like hawks and owls, chickadees and nuthatches, the fox, wolf and weasel tribes, rabbits and quite a number of rodents, are able to find enough food to keep their life-fires going full blast all winter, especially since the majority of them are able to make or find warm shelter of some kind.

(Reprint from SNL, Oct. 18, 1941)

Science News Letter, October 8, 1949

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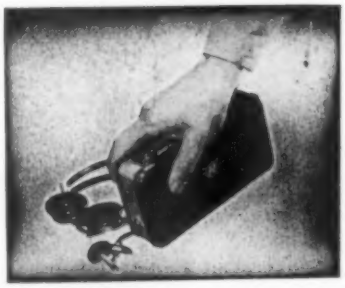

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MEDICINE-CHEMISTRY

Find Fever Disease Aid

➤ CONQUEST of the hitherto incurable San Joaquin or valley fever prevalent in our southwestern desert areas was forecast by a report to the American Chemical Society meeting in Atlantic City, N. J., of a new antibiotic substance, called prodigiosin.

E. D. Botts and Arthur Lack of the Birmingham Veterans Administration Hospital, Van Nuys, Calif., reported that a dye extracted from the bacteria, *B. prodigiosus,* is effective against the organism causing this highly infectious disease, both in the living body and the test tube.

Coccidioidomycosis, as the disease is called, caused considerable trouble among troops in the Southwest for training during the war.

Plastic Starches Fabrics

A new plastic that will permanently "starch" or size fabrics and add strength to paper when wet was reported by a DuPont chemist. The new synthetic resin is what is called a polymer containing free aldehyde groups and it is similar to polyvinyl acetate in its properties.

E. F. Izard of Dupont's rayon department at Buffalo, N. Y., explained that the aldehyde-modified polyvinyl alcohol produced is soluble in water, but when films are cast from it and heated, it becomes insoluble in water. Thus ironing fabrics to which the new resin is applied makes the sizing or "starching" permanent as well as pleasing in appearance. It can also be used to anchor pigments and other substances to paper or fabrics.

"Sunlight" Flavored Milk

That pleasant "sunlight" flavor of milk is caused by the action of light on the butterfat in the milk, but it is really a mild rancidity, Dr. George R. Greenbank, U. S. Bureau of Dairy Industry chemist, reported in accepting the $1,000 Borden Award for his quarter-century researches on improvement of quality of powdered milk.

Flavor of Foods

Pleasantness of flavor of foods is not just a matter of sweetness or mildness or even use of flavor factors that are pleasant in themselves, E. C. Crocker of Arthur D. Little, Inc., Cambridge, Mass., told the chemists. Raw onion and garlic in a salad, rancidity or moldiness in cheese, lemon juice, vinegar, and even mustard, pepper and other spices that pain the mouth, all are pleasant flavors.

The most familiar flavor is usually the most popular, he said, telling of one experiment with beer that showed that a person is most likely to choose in an unlabeled bottle test the kind of beer that he has been using consistently for the past two weeks.

Plastic Prevents Corrosion

Plastic raincoats can now be used to protect concrete structures and both concrete and steel pipe from corrosion by acid water, Charles M. Bodach and J. F. Wilkes of Dearborn Chemical Co., Chicago, reported. The protective coating is a vinyl resin and it is saving from destruction cement-asbestos pipes and concrete water tanks that came into use during war time steel shortages.

Science News Letter, October 8, 1949

More than 1,000,000 Americans obtained their living directly from the *forests,* some in the woods, some in lumber and paper mills, and others in wood-working industries.

• Books of the Week •

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ADVANCED ORGANIC CHEMISTRY—G. W. Wheland—*Wiley*, 2d ed., 799 p., illus., $8.00. A unified treatment with emphasis on the structural theory in its broadest sense. A text for advanced students.

APPLIED MECHANICS—Harvey F. Girvin—*International*, 2d. ed., 417 p., illus., $5.25. A complete revision. The work is adapted to the less mature student familiar with calculus.

BOTANY AND OUR SOCIAL ECONOMY—Alexander C. Martin—*National Wildlife Federation*, 80 p., illus., paper, 10 cents. This pamphlet points out our dependence upon the plants that nature so abundantly provides.

COLLEGE BOTANY—Harry J. Fuller and Oswald Tippo—*Holt*, 993 p., illus., $5.75. An elementary college text designed for use in two-semester and three-quarter courses.

ENGINEERING MATERIALS AND PROCESSES: Metals and Plastics, William Howard Clapp and Donald S. Clark—*International*, 526 p., illus., $6.50. Basic information on the properties of materials and processes by which those materials are made available for use.

GENETICS IN SWEDISH FORESTRY PRACTICE—Bertil Lindquist—*Chronica Botanica*, 173 p., illus., paper, $3.50. A summary of the objects, methods and initial results of forest tree-breeding work in Sweden.

HEALTH GUIDES AND GUARDS—Francis P. Wall and Louis D. Zeidberg—*Prentice-Hall*, 4th ed., 390 p., $4.00. This edition includes the current theories and therapies.

HOW TO DRAW ROLLING STOCK—Paul B. Mann—*Studio*, 62 p., illus., $1.00. Those who have a hobby of trains will enjoy this beautifully illustrated little book.

THE KID FROM MARS—Oscar J. Friend—*Fell*, 270 p., illus., $2.50. A science fiction story dealing with the coming to Earth of one humanoid man from Mars.

LABORATORY EXPERIMENTS IN ORGANIC CHEMISTRY—Roger Adams and John R. Johnson—*Macmillan*, 4th ed., 525 p., illus., $3.25. A beginning laboratory manual.

LABORATORY MANUAL AND PROBLEMS IN GENERAL CHEMISTRY—A. W. Laubengayer—*Rinehart*, 229 p., illus., paper, $2.25. Emphasis has been placed on training in the general principles and experimental methods.

MAN ON THE LANDSCAPE—Vernon Gill Carter—*National Wildlife Federation*, 129 p., illus., $1.50. Some of the fundamentals of plant conservation.

MARINE PERSPECTIVE—Michal Leszczynski—*Studio*, 64 p., illus., $1.00. If you draw or like the sea you will like this book; if you don't draw, it will make you want to try.

THE NAVAJO METEORITE—Sharat Kumar Roy—*Field Museum of Natural History*, 11 p., illus., paper, 30 cents. A monograph.

PHARMACEUTICAL COMPOUNDING AND DISPENSING—Rufus A. Lyman, Editor-in-Chief—*Lippincott*, 321 p., illus., $6.50. Latest information written by 12 leading authorities.

PLANE GEOMETRY—William G. Shute, William W. Shirk, and George F. Porter—*American*, 406 p., illus., $2.48. A beginning high school text.

PRINCIPLES AND PRACTICE IN ORGANIC CHEMISTRY—Howard J. Lucas and David Pressman—*Wiley*, 557 p., illus., $6.00. A laboratory reference and manual for students of organic chemistry.

SCIENCE SUBJECTS MADE EASY: A Guide to the 10 Basic Sciences—Henry Thomas—*Doubleday*, 513 p., illus., $3.95. Elementary information on the basic sciences for home instruction and guidance.

SCIENTIFIC AUTOBIOGRAPHY AND OTHER PAPERS—Max Planck—*Philosophical Library*, 192 p., $3.75. The last writings of a great physicist. Translated from the German by Frank Gaynor.

UNITED STATES RELATIONS WITH CHINA—Department of State—*Gov't Printing Office*, 1,054 p., $3.00. Based on the state department files during the past year. This is the "White Paper."

Science News Letter, October 8, 1949

MEDICINE

Surgery Helps Women With Over-size Breasts

➤ WOMEN whose breasts are too large or who have pendulous (hanging) breasts can be helped by surgical operations, Dr. Hans May, University of Pennsylvania Graduate School of Medicine, told the Medical Society of Pennsylvania meeting in Pittsburgh.

A "most satisfactory" appearance can be achieved, he said, without danger of cysts developing or the breast's normal function as a milk-producing gland being disturbed.

Of the variety of operations available for reconstruction of over-large or otherwise deformed breasts, no one is suited to every type of deformity, Dr. May pointed out. He has worked out an operation of his own which combines certain useful features of some of the standard methods.

One feature of his operation is the removal of the areolas, which are the rings surrounding the nipples, and their transplantation to new sites previously selected and marked by aniline dyes.

Science News Letter, October 8, 1949

Some 80,000,000 pounds of *oyster meat* are harvested each year in the United States; as a producer, Virginia ranks first with Maryland next.

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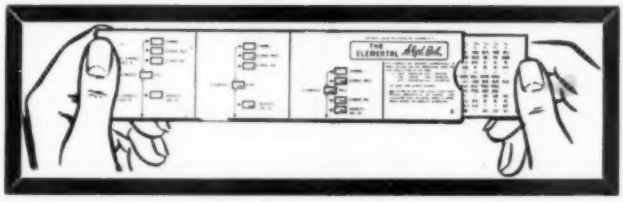

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PAINT REMOVER, developed by the U. S. Air Force for the removal of aircraft camouflage enamels, can be applied as a spray, after which a high-pressure water wash completes the job. It is believed to be a successful material for many industrial processes.

Science News Letter, October 8, 1949

SPRAY NOZZLES, for all kinds of spray problems where a fine break-up at low pressure is required, operate on a new principle, utilizing a unique spiral design, somewhat like the spiral of a wood-boring bit, that produces a finer atomization but is practically non-clogging.

Science News Letter, October 8, 1949

FLASH-KIT for photographers comes complete with all necessary parts, leaving for the purchaser an easy job in final assembly. It is designed to operate with any presently available camera, and includes a lamp good for many thousands of flashes.

Science News Letter, October 8, 1949

FISHMOUTH SPREADER, an improved type recently patented and fashioned from round wire stock, is a scissors-like device but one whose jaws are spread as the handles are pressed together. Its salient feature is a trigger cross arm between the handle ends, the notched teeth of which hold the spreader in open position.

Science News Letter, October 8, 1949

BARK CONTROLLER, for the dog with an early-morning habit of yapping for release from the doghouse, is a homemade apparatus with a microphone for an activator. The microphone picks up the "bark" and starts the mechanism that delivers a squirt of water on the dog's head, as shown in the picture.

Science News Letter, October 8, 1949

MAGNETIC CATCH for cabinets, cupboards and all small-hinged doors, consists of a permanent magnet, attached to the door frame or the under side of a shelf, and a small metal disk on the door. The magnet works on a simple phosphor spring.

Science News Letter, October 8, 1949

EFFECTIVE COOLER for beer in metal kegs is cold water circulated in sealed plastic bands which are attached snugly to the kegs. The bands can be snapped off an old keg and on to a new one with little time or effort. Vinylite sheeting, of the type used, remains flexible at low temperatures.

Science News Letter, October 8, 1949

SALAD BOWLS, rectangular in shape and made of curved birchwood, are bonded together with liquid plastic and formed under high pressure. The wood is treated by an impregnation process which makes it washable and liquid proof, and prevents stains from oil, alcohol or water.

Science News Letter, October 8, 1949

ELECTRIC DEPTH gauge, to measure the distance from the surface to water in a well, utilizes on a weight lowered in the well a coating of such character with respect to the well casing that a current is created when water is reached by the electrode on the weight. It is a newly patented device.

Science News Letter, October 8, 1949

Do You Know?

The *magnitude* of a star is its brightness, not its size.

Oysters are taken commercially in the water of every American seaboard state except Maine and New Hampshire.

Cattle in Turkey are raised principally as work animals, and meat and milk are of secondary importance; sheep and goats are the principal food-supplying animals.

In recent tests on 58 *coals* collected from eight states, it was shown that those from Washington, Alabama and Utah gave the highest ammonia yields in a coking process.

Greenland dogs, sled-pulling huskies, are going from polar to polar regions as sled animals for a Norwegian-Swedish-British Antarctic expedition which leaves Europe soon; some 30 of them are now in Norway.

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